Features

- Ultraminiature 25.4 x25.4x9.9mm Package
- 15 Watts Output Power
- Single or Dual Outputs
- Wide 4:1 Input Voltage Range
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Industry Standard Pinout
- Remote On/Off and Trim pins
- Efficiency to 87%

POWERLINE
DC/DC-Converter
with 3 year Warranty

RECOM

15 Watt Single & Dual Output

Description

The RP15-SAW series are ultraminiature wide input voltage range power DC/DC converters in a case half the size of industry standard 15W converters. Despite their small size, the RP15-SAW converters are fully specified devices with output currents up to 4 Amps, no minimum load, 1600VDC isolation and low ripple/noise figures. The outputs are also fully protected against short circuits, overcurrent and overvoltage. The RP15-SAW series will find many uses in applications where board space and/or board height is at a premium.

RoHS 2011/65/EU 6/6

UL-60950-1 Certified
E196683

Selection Guide 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input (1) Current mA	Efficiency (2) %	Capacitive (3) Load max.
RP15-243.3SAW**	9-36	3.3	4000	45/688	86	12000µF
RP15-2405SAW**	9-36	5	3000	70/762	86	6000µF
RP15-2412SAW**	9-36	12	1300	20/783	87	1000µF
RP15-2415SAW**	9-36	15	1000	20/753	87	660µF
RP15-483.3SAW**	18-75	3.3	4000	25/336	86	12000µF
RP15-4805SAW**	18-75	5	3000	35/382	87	6000µF
RP15-4812SAW**	18-75	12	1300	12/392	87	1000µF
RP15-4815SAW**	18-75	15	1000	12/377	87	660µF
RP15-2405DAW**	9-36	±5	±1500	20/772	85	±3000µF
RP15-2412DAW**	9-36	±12	±625	20/753	87	±520µF
RP15-2415DAW**	9-36	±15	±500	20/744	88	±330µF
RP15-4805DAW**	18-75	±5	±1500	12/386	85	±3000µF
RP15-4812DAW**	18-75	±12	±625	15/382	86	±520µF
RP15-4815DAW**	18-75	±15	±500	20/377	87	±330µF

** Standard part is without suffixes and Trim and CTRL pins are not fitted.

* add suffix **/P** for CTRL function with positive logic (1=ON, 0=OFF) including trim pin for single output

* add suffix **/N** for CTRL function with negative logic (0=ON, 1=OFF) including trim pin for single output

* add suffix **-HC** for premounted heatsink and clips

Ordering Examples

RP15-2405SAW/P = 24V 4:1 Input, 5V Output, Positive Logic CTRL pin and Trim pin fitted.

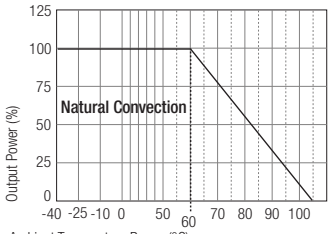
RP15-4805DAW-HC = 48V 4:1 Input, ±5V Output, Premounted Heatsink

RP15-483.3DAW/N = 48V 4:1 Input, ±5V Output, Negative Logic CTRL pin (no trim pin with dual output)

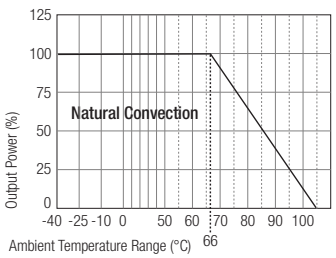
RP15-AW

Derating-Graph
(Ambient Temperature)

RP15-4805SAW



RP15-4805SAW With Heat Sink



Derating graphs are valid only for the shown part numbers.
If you need detailed derating-information about a part-number not shown here please contact our technical support service at info@recom-development.at

Refer to Application Notes

RP15-S_DAW Series

Specifications (typical at nominal input and 25°C unless otherwise noted)

Input Voltage Range	24V nominal input	9-36VDC
	48V nominal input	18-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load) [4]		30mAp-p
Start Up Time (nominal Vin and constant resistor load)		30ms max.
Optional Remote ON/OFF [5]	DC-DC ON	Short or 0V < Vr < 1.2V
(Negative logic)	DC-DC OFF	Open or 3.0V < Vr < 15V
Remote Pin drive current	Nominal Vin	-0.5mA~1.0mA
Remote OFF input current	Nominal Vin	2.5mA typ.
Output Voltage Accuracy (full Load and nominal Vin)		±1%
Optional Output Trim [5]		±10%
Minimum Load		0%
Line Regulation (low line, high line at full load)	Single	±0.2%
	Dual	±0.5%
Load Regulation (0% to full load)	Single	±0.2%
	Dual	±1%
Cross Regulation (Asymmetrical 25% <> 100% load)	Dual Output	±5%
Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output)	Single 3.3, 5V Outputs	75mVp-p
	Others	100mVp-p
	Dual	100mVp-p
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		250µs
Over Voltage Protection	3.3V	3.7-5.4V
Zener diode clamp (only single)	5V	5.4-7.0V
	12V	13.5-19.6V
	15V	16.8-20.5V
Over Load Protection (% of full load at nominal Vin)		150% typ
Undervoltage Lockout		See Application Notes
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)		1600VDC
Isolation Resistance		1 GΩ min.
Isolation Capacitance		1000pF max.Operating Frequency 400kHz typ
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		+105°C
Storage Temperature Range		-55°C to +125°C
Thermal Impedance [6]	Natural convection	18.2°C/Watt
	Natural convection with Heat Sink	15.8°C/Watt
Thermal Shock		MIL-STD-810F

continued on next page

Specifications (typical at nominal input and 25°C unless otherwise noted)

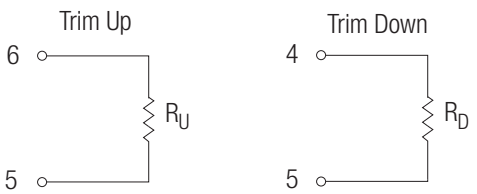
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel plated copper
Base Material		FR4 PCB
Potting Material		Epoxy (UL94-V0)
Conducted Emissions [7]	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria A
Radiated Immunity	EN61000-4-3	Perf. Criteria A
Fast Transient	EN61000-4-4	Perf. Criteria A
Surge [8]	EN61000-4-5	Perf. Criteria A
Conducted Immunity	EN61000-4-6	Perf. Criteria A
Weight		15g
Packing Quantity	Refer to App Notes for tube dimensions	8 pcs per Tube
Dimensions		25.4 x 25.4 x 9.9mm
MTBF [9]	Bellcore TR-NWT-000332	1330 x 10^3 hours
	MIL-HDBK 217F	1459 x 10^3 hours

Notes :

1. Values at nominal input voltage and no load/full load.
2. Typical Value at nominal input voltage and full load.
3. Test by minimum Vin and constant resistor load.
4. Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
5. The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
   Positive logic ON/OFF is marked with suffix-P (eg. RP15-2405SAW/P)
   Negative logic ON/OFF is marked with suffix-N (eg. RP15-2405SAW/N).
   If no suffix is specified, the control pin will be omitted.
6. Optional Heat-sink P/N is 7G-0047-C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
7. Meets Class A with external input capacitors shown below. Will meet Class B with external common mode filter (see Application Notes)
8. Requires external capacitor to meet EN61000-4-5: 220µF/100V, low ESR (48mOhm)
9. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C.
   MIL-HDBK 217F Notice 2. Ta = 25°C, full load, (Ground Benign, controlled environment).

External Output Trimming (optional)

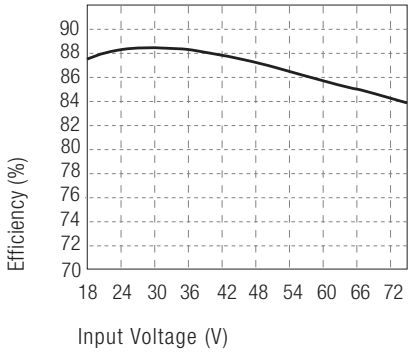
With /CTRL suffix, output can be externally trimmed by using the method shown here.
See Application Notes for details.



Typical Characteristics

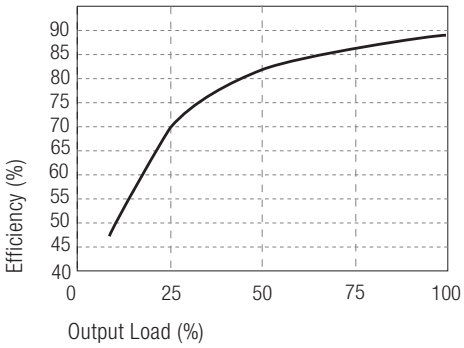
RP15-4805SAW

Efficiency VS Input Voltage

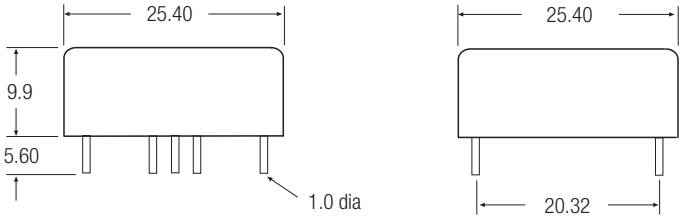


RP15-4805SAW

Efficiency VS Output load



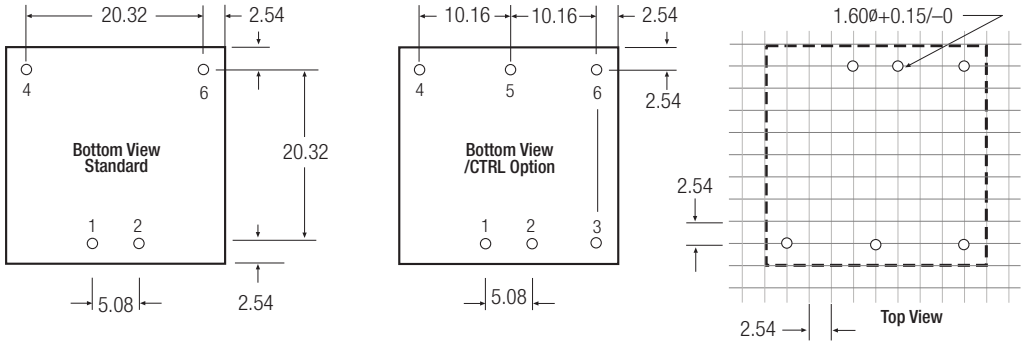
Package Style and Pinning (mm)



Pin Connections

Pin #	Single	Single/ P or /N	Dual	Dual/ P or /N
1	+Vin	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin	-Vin
3	no pin	CTRL	no pin	CTRL
4	+Vout	+Vout	+Vout	+Vout
5	no pin	Trim	Com	Com
6	-Vout	-Vout	-Vout	-Vout

Case Tolerance ±0.5 mm
Pin Pitch Tolerance ±0.25 mm

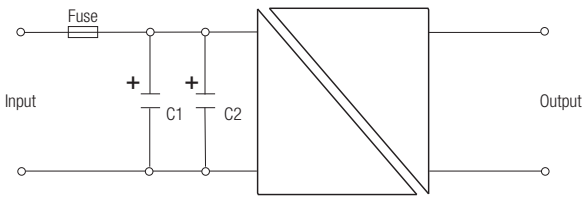


Footprint Details

EMC Filtering - For Class B filter suggestion, see Application Notes

Class A Filter

Vin=24V: C1=6.8µF/50V 1812 MLCC, C2 omitted.
Vin=48V: C1, C2 = 2.2µF/100V 1812 MLCC



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